

ABSTRACT

RADAR (Radio Detection and Ranging) is a system that emits waves that can measure the distance, speed and position of an object. The radar system works by emitting waves through the transmitter toward the object and then the object reflects the waves back to the receiver. After the wave is received by the receiver it is then processed to be able to see the signal produced. In Indonesia, radar is still experiencing problems, especially in terms of prices needed in making a radar system. Software Defined Radio (SDR) technology can be a solution for building a radar system.

SDR technology uses software as a substitute for hardware used as a mixer, filter, modulator / demodulator and so on. Thus the SDR technology can make it easier to build a radar system. One implementation of SDR technology is the Universal Software Radio Peripheral (USRP) radar system. USRP is hardware that is supported by the GNU Radio Companion (GRC) software to make configurations of radar systems. In this final project research uses the type of signal Frequency Modulated Continuous Wave (FMCW). FMCW has many advantages including having a simple design and requires low power to emit a signal and has a high signal resolution so it is better to detect an object being observed.

Testing the implementation of the FMCW radar system that was made working at a frequency of 1 GHz and bandwidth of 10 MHz. In this test, engineering distance using delay. There are two testing schemes conducted in this study. The first scheme is to measure a small shift in an object with a shift range of 1 meter and the second scheme is to measure the position of the object with a distance of 1 meter and 2 meters.

Keywords : RADAR, SDR, USRP, FMCW, GNU Radio